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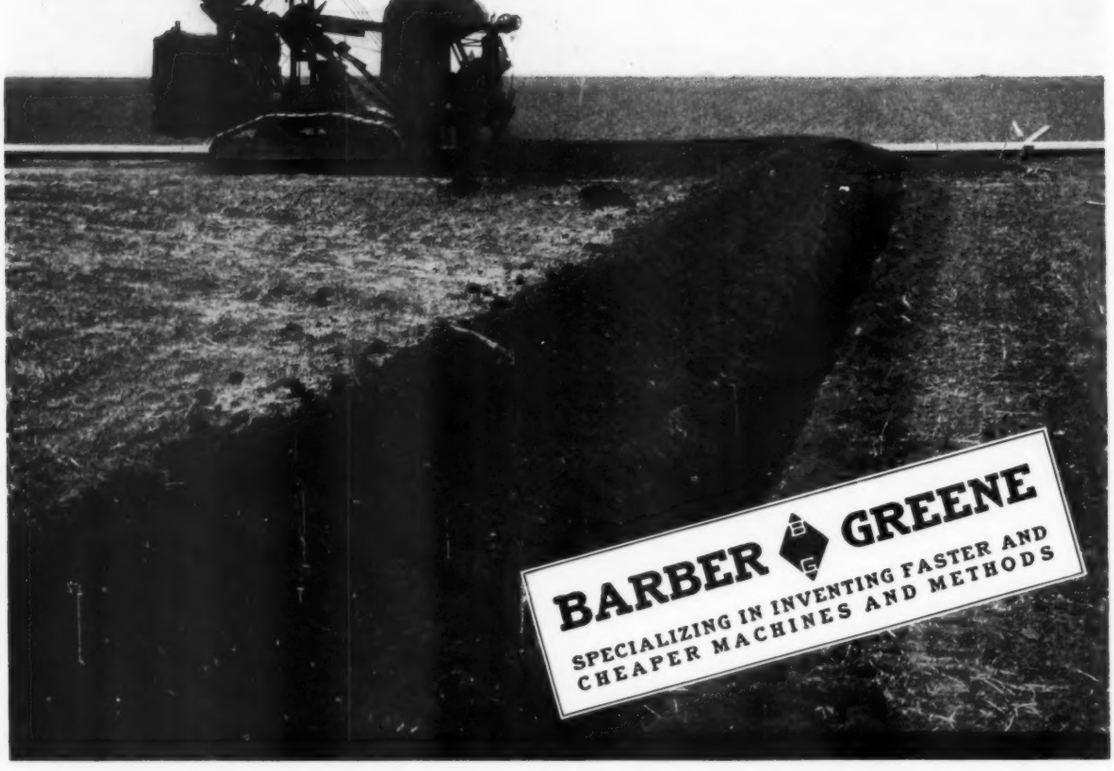
XUM

# More h. p. per Pound
# More Miles per Week

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But it is worth far more as a safety valve for power.

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To check how these things plus more h.p. per pound spell more miles per week—and what they mean to costs per foot, ask for a copy of "Ditching Snapshots and Records" by return mail.

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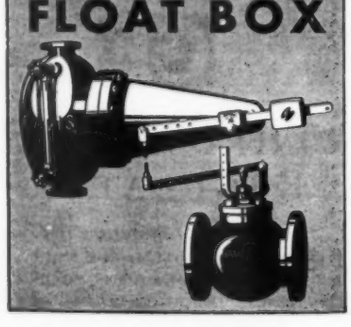


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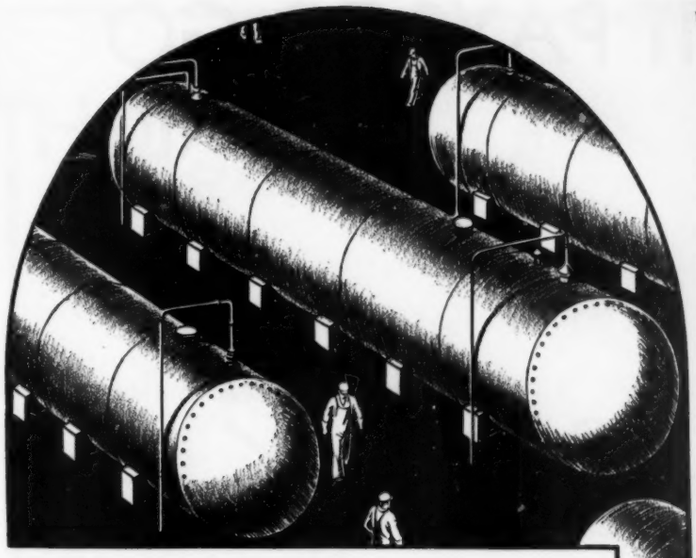

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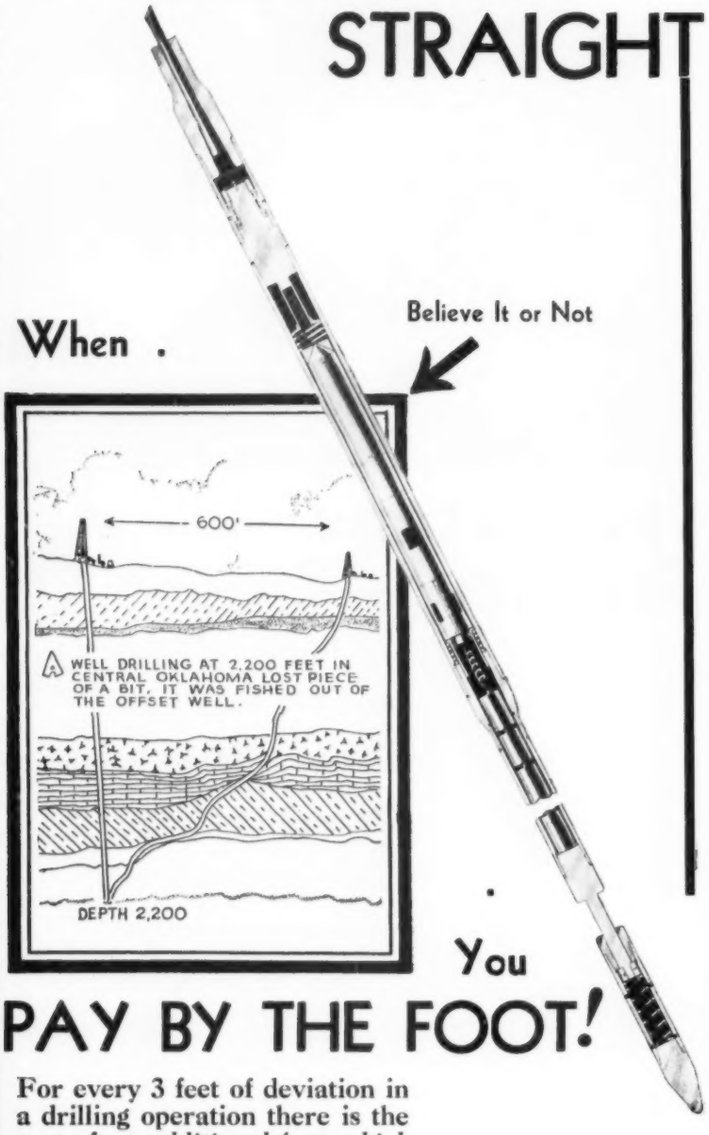


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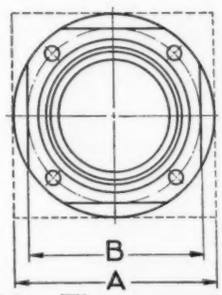


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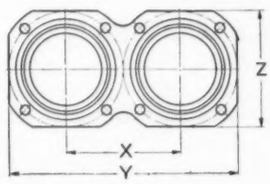
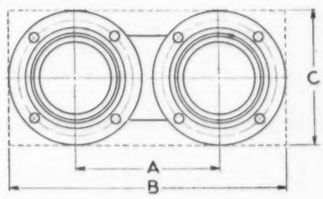



Square-flanged Simplex return bend.

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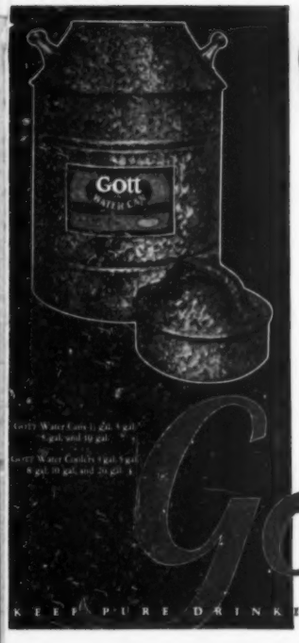


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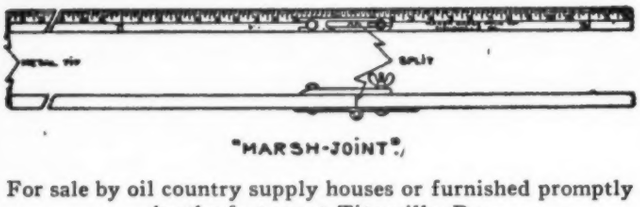


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Midwell's No. 1 La Master, NW cor. Sec. 31-22-4 ..... Shut down 650 ft.

**MORTON COUNTY**

Hydraulic Oil Co.'s No. 1 State Land, NW SE Sec. 22-34-43w ..... T. D. 3,640 ft.; shut down.

**MORRIS COUNTY**

Urschel et al's No. 1 Bersuch, NW SE NW Sec. 10-17-7.. Machine.
Hankerson et al's No. 1 Cessman, SW SE Sec. 24-16-9 ...Underreaming 2,478 ft.

**NORTON COUNTY**

Richards et al's No. 1 Colby, Sec. 17-4-21w .... ..... Rig.

**OSAGE COUNTY**

Briggs & Smith's No. 1 Wood, SE NW Sec. 21-14-15 .... Shut down 1,050 ft.
Fields' No. 1 Usker, SE cor. Sec. 35-16-17 .... ..... Shut down 400 ft.

**RAWLINS COUNTY**

J. G. Durham et al's No. 1 Weaver, SE cor. Sec. 3-2-35w. Shut down 3,501 ft.

**RICE COUNTY**

Detrick & Langston's No. 1 Purcell, NW cor. Sec. 33-19-9w ..... Conglomerate 3,225-46 ft.; show oil and water; T. D. 3,300 ft.
Cress et al's No. 1 Sharp, SE NE Sec. 13-20-10w ..... Show oil 3,107-15 ft.; Silicious 3,-330-36 ft.; estimated 1,500 bbls.; shut in.
Allison-Fitzwilliams' No. 1 Blake, NE NW Sec. 9-18-10w. Shut down 2,750 ft.

**RUSH COUNTY**

Dewey & Mitchell's No. 1 Greenawalt, C SW Sec. 17-19-16w ..... Drlg. 3,725 ft.

**RUSSELL COUNTY**

Agate Oil & Gas Co.'s No. 1 Rochfellow, SE cor. Sec. 6-13-12w ..... Shut down 3,374 ft.
Gilbreath et al's No. 1 Bratton, C NE Sec. 33-11-13w .... Show oil 3,090-94 ft.; shut down. 3,504 ft.; plugging back to 3,-189 ft.

**SEDGWICK COUNTY**

Magnolia's No. 1 McLaughlin, NW cor. 31-28-1w ..... Drlg. 1,360 ft.
Buck et al's No. 1 McNananan, NE NW NW Sec. 2-29-1. Shut down 3,225 ft.

**SALINE COUNTY**

Twin Mounds Oil Co.'s No. 1 Weis, C W half NE NW Sec. 20-13-4w ..... Fishing 2,710 ft.

**SHERIDAN COUNTY**

Flo et al's No. 1 Shoemaker, SE SW SW Sec. 27-7-26w.. Shut down 2,445 ft.

**STAFFORD COUNTY**

Rosenthal, Stanolind and Amerada's No. 1 Gray, C NE Sec. 11-24-13w ..... Shut down 2,900 ft.

**STEVENS COUNTY**

Argus Prod.'s No. 2 Christopher, C NE Sec. 10-33-39w .. Shut down 5,521 ft.

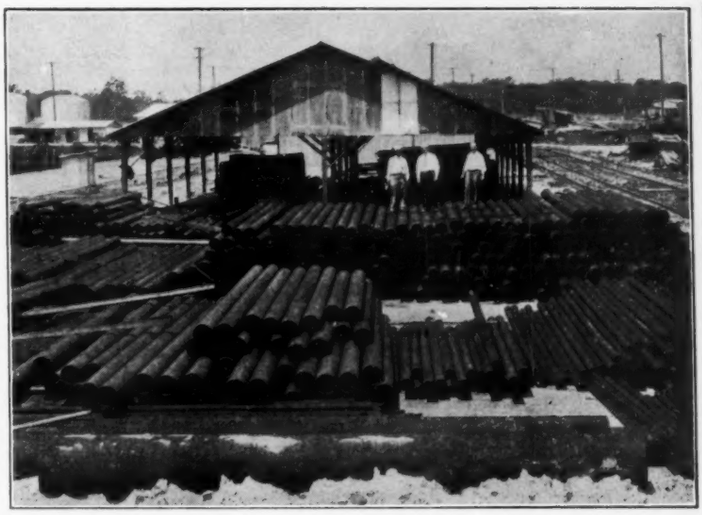
**SUMNER COUNTY**

Tighe et al's No. 1 Thieson, C NW SE SE Sec. 22-34-2 ...Drlg. 1,161 ft.
Trees Oil Co. and Shell's No. 1 Springate, NE SE SW Sec. 6-34-2 ..... Shut down 50 ft.
Spencer et al's No. 1 Porter, NE SW Sec. 12-33-4w ..... Shut down 2,550 ft.
Otstot et al's No. 2 Marlow, C SE NW SE Sec. 22-33-3w. Shut down 4,070 ft.

**WASHINGTON COUNTY**

Sincox et al's No. 1 Penwell, NW SE NE Sec. 16-3-3.... Shut down 1,720 ft.


# BIG SAVINGS ON PIPE



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| | Ready for Shipment |
|---|---|
| 8⅝"—Weight, 44 lb. per ft. | 5,548' |
| 9⅝"—Weight, 48 lb. per ft. | 9,420' |
| 5 "—Weight, 15 lb. per ft. | 5,681' |

**O.D. LINE PIPE**
Beveled Ends Ready for Welding
(Lengths, 25' to 37')

| | Ready for Shipment |
|---|---|
| 6 "—Weight, 19 lb. per ft. | 376' |
| 8 "—Weight, 25 lb. per ft. | 1,739' |
| 10¾"—Weight, 40 lb. per ft. | 4,271' |
| 12 "—Weight, 45 lb. per ft. | 100' |
| 16 "—Weight, 75 lb. per ft. | 102' |
| 24 "—Weight, 100 lb. per ft. | 77' |

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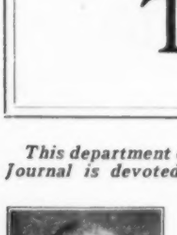
# Technical Questions Answered

BY CHARLES K. FRANCIS, PH.D., TECHNICAL EDITOR

*This department of The Oil and Gas Journal is devoted to the manufacturing branches of the oil industry.*



*Those connected with the refining of crude petroleum, the manufacture of natural gasoline and closely allied industries are invited to submit their problems to Dr. C. K. Francis, technical editor. The department was created for the purpose of aiding managers, superintendents, engineers, chemists and all those engaged in the various phases of plant operation; also those connected with the marketing and utilization of petroleum products.*

*Questions should be submitted in as much detail as possible so as to assure a satisfactory answer.*

*All inquiries should be signed and if other than the given initials are to be used please indicate the desired letters.*

*Questions involving patented processes, intricate formulas, and calculations and estimates of costs, for obvious reasons, cannot be answered. The replies will appear on this page within a reasonable time.*

## OIL FINDERS AND GEOPHYSICAL INSTRUMENTS

**An electrical oil finder is being used here by parties who claim it will locate oil and mineral deposits by magnetic attraction. This is not a geological instrument but a clock arrangement which is supposed to register by long and short dashes the presence or absence of the mineral sought when it is set up by the prospector. Have you any information concerning the accuracy of an instrument of this kind?—A. W. D.**

Many instruments, some of which contain clock movements, magnets or a system of bells, have been devised and offered for sale or use by both ignorant and unscrupulous persons for the purpose of locating petroleum and other mineral deposits. There may be some foundation behind an instrument that will operate in connection with some ores of iron and nickel, because these are found in magnetic forms, in fact there is the well-known miner's compass which is in use for this purpose. However, an instrument of this character must be used by one who is thoroughly familiar with such ore deposits and has special training to enable him to use the compass and understand the meaning of the movements of the needle. The miner's compass is of no value for finding deposits of gold, silver, lead, copper and zinc, or any other nonmagnetic minerals. Petroleum has no attraction for the magnet so any instrument involving the magnetic principle cannot be reliable as a guide to an oil deposit which may exist at some uncertain distance below the surface of the ground.

Some years ago, in 1917, A. J. Ellis, of the U. S. Geological Survey, published Water Supply Paper 416, in which he gave an interesting account of the use of the forked twig or so-called divining rod for locating minerals, finding hidden treasure and even detecting criminals. He showed that such methods are nothing more than a curious superstition that has been a matter of discussion since the middle of the sixteenth century. The author treats in detail the efforts that have been made to defraud and the claims that have been made by persons alleging to be experts in such matters. The advice is offered not to expend any money for the services of any "water witch" or for the purchase of any machine or instrument devised for locating underground water or other minerals.

This has no reference to the geophysical instruments, the seismograph, torsion balance and magnetometer. These are scientific instruments of recognized worth, which, in the hands of qualified experts, are being used to locate favorable structures for the accumulation of petroleum. They do not find oil, but simply aid in the study of geological conditions and eliminate the expense of drilling in unfavorable territory.

## SYNTHETIC ETHYL ALCOHOL FROM GAS

**Ethyl alcohol has been made on a large scale from grains, wood, glucose, syrups and sugar house residues. I find some mention of this alcohol being made in France and Germany from gas and would like to know if any such process has become of commercial importance in the United States?—F. D.**

Many efforts have been made to produce ethyl alcohol from gas, such as natural gas, coke oven gas and refinery gas. Considerable success has been attained in making the higher alcohols, secondary and tertiary, by these synthetic methods applied to refinery gas and from natural gas. These alcohols are now marketed in large quantities for use as solvents in the preparation of lacquers and high grade paints.

An essential step in the use of any hydrocarbon gas for this purpose is the conversion of a large percentage to ethylene, the base material. According to the recent annual report of U. S. Commissioner of Industrial Alcohol, James M. Doran, the manufacture of synthetic ethyl alcohol from ethylene has been firmly established on a commercial basis.

It is stated in this report, covering the fiscal year ending June 30, 1931, that ethylene gas is a recognized source of industrial alcohol on a large scale. Between 6,000,000 and 7,000,000 gallons of alcohol were produced during the past year by this method.

During the fiscal year there were produced 166,014,346 proof gallons of alcohol, a decrease of 25,844,996 proof gallons compared with the quantity produced during the preceding year. This decrease is attributed to the depression during the year in those industries using alcohol as a raw material, to the bureau's policy of limiting production to actual needs of industry, and to the decrease in the use of denatured alcohol.

## GASOLINE PER CENT EVAPORATED

**Concerning the gasoline specifications, is the per cent evaporated at 140° C. obtained by simply reading the cubic centimeters collected in the receiver, or is it obtained by adding the per cent loss to this amount?—R. A. S.**

Previous specifications of the Federal Specifications Board have stipulated under the distillation range that definite quantities shall be recovered in the receiving graduate at each of the several temperatures mentioned. The recent revisions show a change in this respect to per cent evaporated.

The directions for making the observation state: Per cent evaporated shall be found by adding the distillation loss to the amount collected in the receiver at each specification temperature.

## LUBRICATING OIL SPECIFICATIONS AND S.A.E. NUMBERS

**What are the other tests for S.A.E. lubricating oil that correspond with the viscosities? Why are not such tests as flash, fire and pour not included with viscosity?—H. L.**

S.A.E. numbers were proposed by the Society of Automotive Engineers as a system for the broad classification of lubricating oil used in automobiles. These numbers have viscosity equivalents because viscosity is recognized as the most important single property of a lubricating oil. An S.A.E. No. 30 oil must have a viscosity between 185 and 255 at 130° F. The refiner may make this oil of such flash, fire, pour, etc., as will conform to the stock available and the particular method of manufacture. All S.A.E. No. 30 oils may not be of equal quality as shown by actual service conditions. Detailed specifications are sometimes required for oil to be used under definite conditions but their widest use is simply for purposes of identification.

The service requirements of lubricating oil is being investigated by Technical Committee B, a subcommittee of D-2, of the American Society for Testing Materials. When discussing the subject before this committee, H. C. Mougey arranged the specifications of lubricating oil into three classes, as follows:

1. The S.A.E. viscosity numbers which constitute a classification for purposes of recommendation. This type of specification is the one which experience has shown to be most desirable for use by the general public.

2. Identification tests, sometimes called purchasing agents' specifications. These are identification tests which make it possible for a certain oil to be ordered and its identity checked when it is received. There is no assurance that many other oils which might not meet the tests and limits might not be much better for the desired service. This type of specification is very valuable, but unless it is properly used, it tends toward stagnation, and the blocking of progress for both the oil industry and the automobile industry.

3. Quality specifications. These are only beginning to come into use. They depend upon the proper co-ordination of oil and the use to be made of it. This is the problem upon which Technical Committee B is now working. Work on quality specifications is of great value in removing unnecessary restrictions and in developing better oils and better engines.

## ACID TREATMENT BRIGHT STOCKS

**We would appreciate the following information relating to the treatment of bright stocks with acid: What temperature is sulphuric acid the most effective? What temperature in contacting with clay is most effective? Would it be a material advantage to do acid treating at approximately 275° F.? What is the most appropriate way to neutralize the acid after treatment?—E. G.**

There are several conditions which should be known when treating lubricating oils with acid. The quantity of acid required, as well as other factors, will have to be varied according to the character of the type and extent of reduction; also, the chemical composition of the oil will have to be known if the best results are to be obtained.

An oil free, or practically free, from asphaltic materials does not require as much acid as one of the asphaltic base type. The bright stocks made in the Mid-Continent area are derived mainly from the mixed base oils and therefore probably require more acid and closer control than do the oils of the single base or paraffinic type. It is the practice in this region when making bright stocks to treat with from 20 to 60 pounds of 66° acid, this quantity being applied in several portions or "dumps." The acid is added to the warm or hot oil, the temperature being carefully controlled, according to the qualities of the stock, and may range from about 120° F to 150° F. If there is not much tar to be removed some treaters prefer to run the oil at normal temperature, but the heavy oil handles much better as a general rule if some heat is used. The temperature must not be too high because it is almost impossible to control the rate of the reaction when once started at an elevated temperature. Another consideration is that the acid must not be left in contact with the oil too long. Too much acid and too long contact produce about the same result; that is the separation of particles of carbon that are difficult to remove. Additional damage of over acid treatment is indicated by poor color and a characteristic bloom.

Somewhat higher temperatures are used in the contact process than in the agitator process, but this should always be from 10° to 20° below the flashpoint. Since the acid oil is not neutralized with caustic soda in the contact process and not so much time is necessary for settling, more effective use is made of the acid. After a rapid settling of the acid sludge, the oil is treated with a small quantity of activated clay and passed to the filter. Some refiners give the oil from the filter-press a rapid pass through a percolating filter, charged with fuller's earth, to remove the last traces of acid and to improve the color.

The neutralization of the acid treated oil from the acid agitator is usually accomplished by water and weak alkaline washes; the alkaline wash may vary from 1° to 5° Be. in caustic soda.

Without knowing more about the local conditions it would be impossible to say what influence a treatment at 275° F. would have on the particular stock.

## REID BOMB PRESSURES AT ABSOLUTE

**The vapor pressure of natural gasoline as obtained by the Reid Bomb Method is sometimes referred to as absolute pressure. For the new specifications is this pressure the gauge pressure plus or minus the air chamber correction, or should 14.4 pounds be added to this reading?—R. A. S.**

The Bureau of Explosives has adopted the Reid bomb for determining the vapor pressure of natural gasoline and other liquids to which it is applicable. The bureau has announced the complete procedure to be followed when inspecting gasoline to be transporting on and after March 21, 1932. These directions were published in full in The Oil and Gas Journal, December 21, 1931, page 89.

It is explained in these directions that due to the fact that the atmospheric pressure provided in the air chamber counteracts the external atmospheric pressure, the only pressure acting internally on the pressure gauge is the absolute vapor pressure of the liquid in the bomb, so that the gauge reading is the absolute vapor pressure of the liquid in pounds per square inch at 100° F. For purposes of brevity the Reid vapor pressure shall be recorded in pounds, without reference to temperature used in the test or to unit of surface.

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## ENGLISH COLONIES TO OFFER OIL AGREEMENT

NEW YORK, Feb. 8.—American petroleum trade with Great Britain will be adversely affected by the move now under way to promote economic co-operation between the United Kingdom and British colonies and dominions, it is believed in oil trade quarters.

J. H. Thomas, British secretary for dominion affairs, has announced that an imperial economic conference to consider plans for this movement will be held next July at Ottawa, Canada. The object of the conference will be to promote economic co-operation between the homeland and the dominions, Mr. Thomas stated and the conference will propose a great extension of the present system of imperial preference.

"The government" he said, "will go to Ottawa quite prepared to depart from certain well known principles which have hitherto existed in this country. In fact, there will be no embargo, so far as the British government is concerned, on the points of policy they will be prepared to discuss there. But, having said that, it is equally necessary to keep in mind that we have a very distinct point of view and interest in the policy of the dominions themselves. No conference will be successful or lasting or beneficial if it is assumed that all concessions are on one side."

There have been strong suggestions from British oil producing and refining dominions and colonies during recent months that the home government make satisfactory arrangements for giving preference to British-produced petroleum in the markets of the United Kingdom, preferably through the imposition of import duties on all petroleum produced or shipped from non-British sources. This proposal has found much favor in the United Kingdom, where the large and modern home refining industry operated at but 33⅓ per cent of capacity throughout 1931. Such an arrangement, British oil interests have stated, would not only benefit British colonies, and thus directly strengthen the economic position of the empire, but would likewise aid the home government, in that the operation of British refineries at capacity would materially lighten the burden of unemployment in England and result in a saving to the government through lessened dole payments.

## LESS CAR OWNERSHIP, MORE GASOLINE USED

Alfred Reeves, general manager of the National Automobile Chamber of Commerce, says:

"In considering the activities of American automobile manufacturers during the last year, estimates based upon records which are not yet complete indicate that:

"The industry's output, including foreign assemblies of American vehicles, did not exceed 2,500,000 units. This was nearly a million units less than 1930 production and something less than 50 per cent of the record output of 5,500,000 vehicles in 1929.

"For the first time in the history of the automobile industry, motor vehicle ownership in the United States was lower at the close of the year than it was at the beginning. Tabulations indicate a shrinkage of more than 500,000 units in the nation's motor vehicle inventory for the year.

"Despite this, gasoline consumption—the measure of highway usage—increased more than 3 per cent over the record year of 1930.

"Expenditures on street and highway construction and maintenance involved a record sum—$2,400,000,000—$200,000,000 more than was spent for the same purpose in 1930.

"Export markets suffered more drastic recessions than did the domestic one, absorbing less than 13 per cent of the industry's total output.

"For the second time state and municipal revenues from special motor vehicle levies and personal property taxes on cars and trucks exceeded $1,000,000,000. Gasoline tax revenues approximated $524,000,000, a gain of $30,000,000 over 1930.

"The motor industry maintained its position as a leading employer of labor and consumer of raw materials and the value of its finished products, $2,100,000,000, gave it first place among all American industries."